

REMARKS

Summary of the Office Action

Fig. 4 stands objected to because of informalities.

Drawings stand objected to as failing to comply with 37 C.F.R. 1.84(p)(5), because they do not include a reference sign mentioned in the description.

The abstract of the disclosure stands objected to because of informalities.

The specification stands objected to because of informalities.

Claims 1-6 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

Claims 1, 3 and 5-6 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by *Inoue* (U.S. Patent No. 5,705,105).

Claims 2 and 4 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Inoue*.

Summary of the Response to the Office Action

Applicants have canceled claims 2, 4 and 6 without prejudice or disclaimer, amended claims 1, 3 and 5 to more clearly define the invention, and added new claims 7-10. Applicants have also amended the abstract and corresponding paragraph of the specification to correct informalities. Accordingly, claims 1, 3, 5 and 7-10 are presently pending.

In addition, Applicants submit concurrently herewith a Request for Approval of Drawing Change.

Objection to Drawings

Fig. 4 stands objected to because it is not labeled as “Prior Art.” In a Request for Drawing Change filed concurrently herewith, Applicants propose to amend the drawings by labeling FIG. 4 as “Prior Art.” Accordingly, Applicants respectfully request that the objection to Fig. 4 be withdrawn.

Drawings stand objected to as failing to comply with 37 C.F.R. 1.84(p)(5), because they do not include a reference sign “19” mentioned in the description. Applicants respectfully submit that the reference sign “19” mentioned in the description should be “119,” which is included in the drawings, and Applicants have made a corresponding correction to the specification. Accordingly, Applicants respectfully request that the objection to the drawings be withdrawn.

Objection to Abstract

The abstract stands objected to because of informalities. Applicants have amended the abstract to address the Examiner’s concerns. Accordingly, Applicants respectfully request the objection to the abstract be withdrawn.

Objection to Specification

The specification stands objected to because of informalities. Applicants have amended the specification to address the Examiner’s concerns. Accordingly, Applicants respectfully request the objection to the specification be withdrawn.

The Rejections under 35 U.S.C. §112, second paragraph

Claims 1-6 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Applicants have canceled claims 2, 4 and 6, and amended claims 1, 3 and 5 in accordance with

the comments in the Office Action. Applicants respectfully submit that claims 1, 3 and 5, as amended, fully complies with the requirements of 35 U.S.C. §112, second paragraph. Accordingly, Applicants respectfully request the rejection under 35 U.S.C. §112, second paragraph, be withdrawn.

The Rejections under 35 U.S.C. §§102(b) and 103(a)

Claims 1, 3 and 5-6 stand rejected under 35 U.S.C. §102(b) as being anticipated by *Inoue*. Claims 2 and 4 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Inoue*. The 102/103 rejections are respectfully traversed for at least the following reasons.

With respect to independent claims 1 and 3, as amended, Applicants respectfully submit that *Inoue* does not teach or suggest “second heat suppressing means at a position opposite said first heat suppressing means on a second mold body side of said pair of mold bodies.”

As shown in Fig. 2 and as described in lines 51-53 of column 6 of *Inoue*, *Inoue* discloses only a stationary end bush 28, which corresponds to “first heat suppressing means,” and as further stated in item 12 of page 7 of the Office Action, the Examiner admits that *Inoue* fails to teach “second heat suppressing means at a position opposite the first heat suppressing means a second mold body side of the pair of mold bodies.” Therefore, Applicants respectfully submit that *Inoue* fails to teach “second heat suppressing means at a position opposite said first heat suppressing means on a second mold body side of said pair of mold bodies,” as recited by amended independent claims 1 and 3.

In the Office Action, however, the Examiner alleges that “to add a second heat suppressing member such as the one taught by *Inoue* would amount to the duplication of a

known part for the multiplied effect of more heat suppression.” The Examiner appears to comment that it is obvious to provide a plurality of means for suppressing heat in order to improve an effect of thermal insulating. Applicants respectfully disagree. Applicants respectfully submit that non-unity of heat at a movable side does not cause such an effect, and if a member is provided at the movable side, size and weight of the heat suppressing means become so large that it is necessary to change the structure. Therefore, Applicants respectfully submit that the only motivation to add a second heat suppressing member is found in the Applicants’ own application, and there is no motivation taught or suggested by the cited reference to add the second heat suppressing member to obtain the claimed invention.

MPEP § 2141 instructs that "the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention." MPEP 2143 instructs that "the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant’s disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ 1438 (Fed. Cir. 1991)." The Federal Circuit has clearly held that "the motivation to combine references cannot come from the invention itself." Heidelberger Druckmaschinen AG v. Hantscho Commercial Products, Inc., 21 F.3d 1068, 30 USPQ 2d 1377 (Fed. Cir. 1993). In view of the explanation above, Applicants respectfully submit that the Office Action has not established a *prima facie* case of obviousness and that the rejections under 35 U.S.C. § 103(a) is improper.

With respect to independent claim 5, as amended, Applicants respectfully submit that *Inoue* does not teach or suggest “said molding space has substantially the same volume as said conductor member.”

As shown in Fig. 1 of *Inoue*, which is provided in the Office Action, the Examiner suggests that a space of *Inoue*, denoted by an arrow, is a “molding space” as claimed in the present application. The Examiner alleges that the arrow-denoted space of *Inoue* has almost the same volume as a conduction member 27 of *Inoue*. However, as shown in Fig. 1 of *Inoue*, Applicants respectfully submit that the arrow-denoted space of *Inoue* is smaller than the conduction member 27 of *Inoue*. Therefore, Applicants respectfully submit that *Inoue* fails to teach or suggest “said molding space has substantially the same volume as said conductor member,” as recited by amended independent claim 5.

Since claims 2, 4 and 6 have been canceled, the rejections of claims 2, 4 and 6 become moot.

Applicants respectfully submit that the rejection under 35 U.S.C. §§ 102(b) and 103(a) should be withdrawn because *Inoue* does not teach or suggest each feature of independent claims 1, 3 and 5, as amended. As pointed out in MPEP § 2131, “[t]o anticipate a claim, the reference must teach every element of the claim.” Thus, “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. v. Union Oil Co. Of California, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987).” Similarly, MPEP § 2143.03 instructs that “[t]o establish prima facie obviousness of

a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 409 F.2d 981, 180 USPQ 580 (CCPA 1974)."

New Claims 9-13

Applicants have added new claims 7-10 to further define the invention. Applicants respectfully submit that new claims 7-10 are allowable over the prior art of record based on the reasons set forth above.

Conclusion

In view of the foregoing, withdrawal of the rejections and allowance of the pending claims are earnestly solicited. Should there remain any questions or comments regarding this response or the application in general, the Examiner is urged to contact the undersigned at the number listed below.

Attached hereto is a marked-up version of the changes made to the title and the abstract by the current amendment. The attached page is captioned "Version with markings to show changes made."

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and the fee should also be charged to our Deposit Account.

Respectfully Submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE ABSTRACT:

Please amend the abstract of the disclosure as follows.

A conduction [means] **member** having conduction path for injecting molten molding material within a mold space is fitted to one of a pair of mold bodies which form the disc-shaped mold space. A first heat suppressing [means] **member** for suppressing heat within the conduction path from being transmitted to the one of the mold bodies is disposed between the conduction [means] **member** and the one of the mold bodies. Further, a second heat suppressing [means] **member** is disposed at a position [opposing to] **opposite** the first heat suppressing [means] **member** at the time of mold-clamping the pair of the mold bodies.

IN THE SPECIFICATION:

Kindly amend paragraph [0025] of the disclosure as follows.

[0012]

On the other hand, at the tip end portion of the spool bush 108 provided so as to penetrate the center of the fixed mold mirror surface board 106 of the fixed mold body 101, a die portion 119 constituting a part of the mold forming portion is formed so as to oppose to the punch 115 of a mold releasing mechanism. The portion [19] **119** serves to punch the center hole of the substrate in cooperation with the tip end portion of the punch 115. A space formed among the die portion 119 of the spool bush 118, the tip end portion of the spool bush inside the die portion 119 and the tip end portion of the punch 115 constitutes a runner and a gate serving as a fluid

path for conducting the molten molding material injected from the spool 109 into the mold space 105.

Please amend paragraph [0025] of the disclosure as follows.

[0025]

(Means for Solving the Problems)

In order to solve the aforesaid problem, the invention [claimed in claim 1] **of a first aspect** is arranged in a manner that in a mold for injection molding of a disc substrate including a pair of mold bodies which are disposed in a manner that circular-shaped mold forming surfaces thereof are opposed to each other to form a disc-shaped mold space therebetween, and a conduction means which is fitted to one of the pair of mold bodies so as to communicate with outside through a conduction path for conducting molten molding material injected from [the side] **outside** into the disc-shaped mold space, the mold for injection molding of a disc substrate is characterized in that a first heat suppressing means for suppressing heat within the conduction path from being transmitted to the one of the pair of mold bodies is disposed between the conduction means and the one of the pair of mold bodies fitted to the conduction means.

Please amend paragraph [0026] of the disclosure as follows.

[0026]

According to the invention [claimed in claim 1] **of the first aspect**, at the time of molding a disc substrate by using the mold, even when the heat of the molten molding material injected into the conduction path of the conduction means fitted to the one mold body is

transmitted within the conduction means, the heat is suppressed from being transmitted to the one mold body by the first heat suppressing means which is disposed between the conduction means and the one mold body. Thus, the one mold body is prevented from being heated to a temperature higher than that of the other mold body, so that there does not arise any asymmetry of residual stresses that becomes a cause of the warp of the injection-molded substrate.

Please amend paragraph [0027] of the disclosure as follows.

[0027]

The invention [claimed in claim 2] **of a second aspect** is arranged, in the arrangement of [claim 1] **the first aspect**, in a manner that a second heat suppressing means is disposed at a position opposing to the first heat suppressing means on other mold body side of the pair of mold bodies.

Plases amend paragraph [0028] of the disclosure as follows.

[0028]

According to the invention [claimed in claim 2] **of the second aspect**, at the time of molding a disc substrate by using the mold, even when the heat of the molten molding material injected into the conduction path of the conduction means fitted to the one mold body is transmitted within the conduction means, the heat is suppressed from being transmitted to the one mold body by the first heat suppressing means which is disposed between the conduction means and the one mold body. Further, the heat is also suppressed from being transmitted to the other mold body by the second heat suppressing means which is disposed at the position

opposing to the first heat suppressing means on the other mold body side. Thus, there does not arise asymmetry of residual stresses that becomes a cause of the warp of the injection-molded substrate.

Please amend paragraph [0055] of the disclosure as follows.

[0055]

(Effects of the Invention)

As described above, according to the invention [claimed in claim 1] **of the first aspect**, since the first [head] **heat** suppressing means suppresses the heat of the molten molding material from being transmitted to the mold body, the degree of asymmetry of the heat distribution between the pair of mold bodies of the mold can be reduced. Thus, the degree of asymmetry of the residual stresses which is a cause of the warp of the injection-molded substrate can be reduced. Further, since the temperature distribution on the mold forming surface can be made uniform, it is possible to reduce double refraction.

Please amend paragraph [0056] of the disclosure as follows.

[0056]

According to the invention [claimed in claim 2] **of the second aspect**, at the time of molding a disc substrate by using the mold, the heat of the injected molten molding material is suppressed from being transmitted to the one mold body by the first heat suppressing means which is disposed between the conduction means and the one mold body, and further, the heat is also suppressed from being transmitted to the other mold body by the second heat suppressing

means which is disposed at the position opposing to the first heat suppressing means on the other mold body side. Thus, since the temperature distribution becomes almost uniform between the two mold bodies, there does not arise asymmetry of residual stresses that becomes a cause of the warp of the injection-molded substrate.

As a result, as for the disc substrate, the warp is prevented from being caused just after the molding and further the warp is prevented from being increased with the time lapse after the molding.

IN THE CLAIMS:

Claims 2, 4 and 6 have been canceled without prejudice or disclaimer.

Please amend pending claims 1, 3 and 5 as follows:

1. (Amended) A mold for injection molding of a disc comprising:
a pair of mold bodies which are disposed in a manner that circular-shaped mold forming surfaces thereof are opposed to each other to form a disc-shaped mold space therebetween,
a conduction member which is fitted to [one] a first of said pair of mold bodies so as to communicate with outside through a conduction path for conducting molten molding material injected from [the side] outside into said disc-shaped mold space, and
a first heat suppressing member for suppressing heat within said conduction path from being transmitted to said [one] first of said pair of mold bodies is disposed between said conduction member and said [one] first of said pair of mold bodies fitted to said conduction member,

a second heat suppressing member at a position opposite said first heat suppressing member on a second mold body side of said pair of mold bodies.

3. (Amended) A mold for injection molding of a disc substrate comprising:
a pair of mold bodies which are disposed in a manner that circular-shaped mold forming surfaces thereof are opposed to each other to form a disc-shaped mold space therebetween,
a conduction means which is fitted to [one] **a first** of said pair of mold bodies so as to communicate with outside through a conduction path for conducting molten molding material injected from [the side] **outside** into said disc-shaped mold space, and
a first heat suppressing means for suppressing heat within said conduction path from being transmitted to said [one] **first** of said pair of mold bodies disposed between said conduction means and said [one] **first** of said pair of mold bodies fitted to said conduction means,

a second heat suppressing member at a position opposite said first heat suppressing member on a second mold body side of said pair of mold bodies.

5. (Amended) A mold for injection molding of a disc substrate comprising:
a pair of mold bodies which are disposed in a manner that circular-shaped mold forming surfaces thereof are opposed to each other to form a disc-shaped mold space therebetween,

a conduction member which is fitted to [one] a first of said pair of mold bodies so as to communicate with outside through a conduction path for conducting molten molding material injected from [the side] outside into said disc-shaped mold space, wherein

said mold is provided with a molding space for suppressing heat within said conduction path from being transmitted to said [one] first of said pair of mold bodies disposed at a portion of [one] a second of said pair of mold bodies [side opposing to] opposite said conduction member, and

said molding space has substantially the same volume as said conduction member.